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16. Abstract This document provides the necessary instructions for programming personnel to install Integrated Noise Model (INM) Version 3 on the CDC 6000, Cyber 170 or IBM S/360-370 computers. INM Version 3 is the state-of-the-art computer tool for determining the total impact of aircraft noise at and around airports. This manual describes the model history, the model components, the hardware and software requirements, the characteristics of the model release tapes, the installation procedures and the execution procedures. INM Version 3 supersedes Version 2 which was released in September 1979. This document replaces "INM, Integrated Noise Model, Version 2, Installation Instructions" (Report No. FAA-EE-80-50).					
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INM
INTEGRATED NOISE MODEL
VERSION 3
INSTALLATION INSTRUCTIONS

November 30, 1981

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I .0 INTRODUCTION

Version 1 of the Integrated Noise Model (**INM**) was released in January 1978 by the Federal Aviation Administration (FAA). The model was originally developed to provide aviation specialists and airport planners with an analysis tool to assist in assessing the impact of aircraft noise in the vicinity of airports. Since its first public release, the model has been used extensively in several major airport studies. It has, in fact, become the recommended tool to generate site analysis for Airport Noise Control and Land Use Compatibility Planning (**ANCLUC**) studies.

Version 2 of the **INM**, released in September 1979, included modifications to expand the actual modeling capabilities and to improve the overall ease of use of the **INM**. Some of these modifications were based on recommendations made by interested parties such as the Air Transport Association (**ATA**) and Airport Operation's Council International (**AOCI**). In particular, Version 2 of the model included:

- o an expanded data base of aircraft noise and performance
- o additional user selection for input data, e.g. noise curve data, takeoff profiles, approach parameters and additional aircraft types
- o improved documentation
- o additional modules, including an interactive conversational input module, an input data verifier and a data base printing program.

Version 3 of the **INM** is a state-of-the-art tool for determining the total impact of aircraft noise at and around airports. Although Version 3 uses much of the methodology of Version 2, it is essentially a new model in terms of actual program code. The new model is written in ANSI FORTRAN machine-independent, fully-documented code which is highly portable across major computer systems. Version 3 incorporates into one model a number of modules whose functions were performed by separate programs in Version 2.

Version 3 offers substantial improvements over Version 2. Most importantly, it contains a more proficient method of calculating noise contours with the replacement of the point search technique with a grid mapping technique. This version also includes:

- o an updated and expanded data base of aircraft noise and performance
- o a new input processor which accepts keyword free format input and allows for numerous new options for organizing input data
- o a verifier option to determine whether the input information is logically consistent with both the data base and the computational methods
- o an option to preview flight information through the generation of a plot
- o a revised algorithm for lateral attenuation
- o a simple and straightforward method of simulating "touch-and-go" types of operations
- o an algorithm to account for the effect of wind force and direction on aircraft performance
- o an improved and expanded report generating system.

The FAA currently provides the **INM** user community and the general public with a package for installing Version 3.8 (Version 3 of the model with Data Base No. 8) on the **CDC** and IBM computer systems. This package provides a version of the **INM** which is portable for **CDC** and IBM hardware while maintaining the source code on a **CDC** computer system utilizing the UPDATE feature. Future plans include expanding the package for the HIS and UNIVAC computer systems. In addition, the model will be converted for used on the **DEC** IO system.

The purpose of this Installation Instructions manual is to provide the information necessary for computer personnel to install the **INM** on each of the computer systems for which it is available. The manual describes the model history, available documentation and the model components. In addition, for each computer system, the manual describes the hardware and software requirements, the installation procedures, the execution procedures and computer system documentation.

1.1 MODEL CAPABILITIES AND OUTPUTS

The **INM** determines the impact of aircraft noise at or around airports. The model will compute noise exposure values for the following noise metrics:

- o Noise Exposure Forecast (**NEF**), a weighted measure based on effective perceived noise decibel (**EPNdB**) as the unit of aircraft noise;
- o Equivalent Sound Level (**Leq**), an energy summation of the aggregate noise environment as measured in A-weighted decibel units (**dB(A)**);
- o Day-Night Average Sound Level (**Ldn**), based on **Leq**, with nighttime operations weighted by a penalty;
- o Community Noise Equivalent Level (**CNEL**), similar to **Ldn** with a penalty for early evening hours of operation;

The model performs the following types of analyses:

- o A grid analysis reflecting the values of selective noise metrics at **user-specified** locations in the airport vicinity. The results are presented as a tabular report (see Figure 1). In addition, a detailed report may be obtained (see Figure 2).
- o A contour analysis locating contours of equal noise impact. The resulting contours can be graphically produced on a **CalComp** plotter, if available, or the data for all points can be presented in tabular form (see Figures 3 and 4). In addition, a tabular report of populations within the contour areas may be obtained (see Figure 5). This last report is called the Population Impact Report.

The model also produces a number of supporting reports. For example, the ECHO Reports present the **User** Input Data in tabular format, the Verifier Report notifies the user of inconsistencies in the input data, and the Data Base Print Report presents selected portions of the **INM** data base in tabular format. In addition, without performing grid or contour analyses of the input data, the model can produce PREVIEW plots of the input scenario flights. All of these reports aid the user in developing an accurate scenario of input data.

ANNUAL AVERAGE EXPOSURE AT A GIVEN LOCATION OF YIELD IN THE V LIPKINT

VI REPORT - EXAMPLE (MHA)

[illegible]

I	SLIP = "NULL"	I	END 3113M	I
I		I		I
I	'Cj0B = A	I	'(p)clr 1 = *11	I
I		I		I

AIRCRAFT	PROFILE	MID	APPROACH	NOISE	CURVE	STAGE	T AND G	FLIGHT	TRACK	RUNWAY	SEL	DAY	EVENING	NIGHT	CONTRIBUTION
727200	TOP117	0	AP20	3UT8D	1	1	T	TR3	TR3	09R	97.1	21.0	0.0	2.5	0.61442E+02
DC930	TOP155	(j)	AP30	2UT8D	1	1	T	TR3	TR3	09R	94.9	26.5	0.0	0.5	0.59838E+02
DC930	TOP155	1	AP30	2UT8D	1	1	T	TR1	TR1	09L	90.4	26.5	0.0	0.5	0.55326E+02
707320	TOP39	0	AP7	UT3D	2	2	T	TR3	TR3	09R	96.7	3.5	0.0	1.0	0.53850E+02
DC930	TOP156	1	AP30	2UT8D	2	2	T	TR1	TR1	09L	89.9	8.0	0.0	0.5	0.49774E+02
DC930	TOP157	0	AP30	2UT8D	3	3	T	TR3	TR3	09R	95.7	1.5	0.0	0.0	0.48049E+02
727200	TOP117	1	AP20	3UT8D	1	1	T	TR1	TR1	09L	90.7	3.0	0.0	0.5	0.46752E+02
707320	TOP42	0	AP7	UT3D	5	5	T	TR3	TR3	09R	97.6	0.5	0.0	0.0	0.45186E+02
727200	TOP118	0	AP20	3UT8D	2	2	T	TR2	TR2	27R	86.7	4.4	0.0	1.4	0.44975E+02
707320	TOP41	0	AP7	UT3D	4	4	T	TR2	TR2	27R	87.3	2.5	0.0	0.0	0.41926E+02
DC930	TOP157	1	AP30	2UT8D	3	3	T	TR1	TR1	09L	89.5	1.5	0.0	0.0	0.41819E+02

916 = 1337 153411

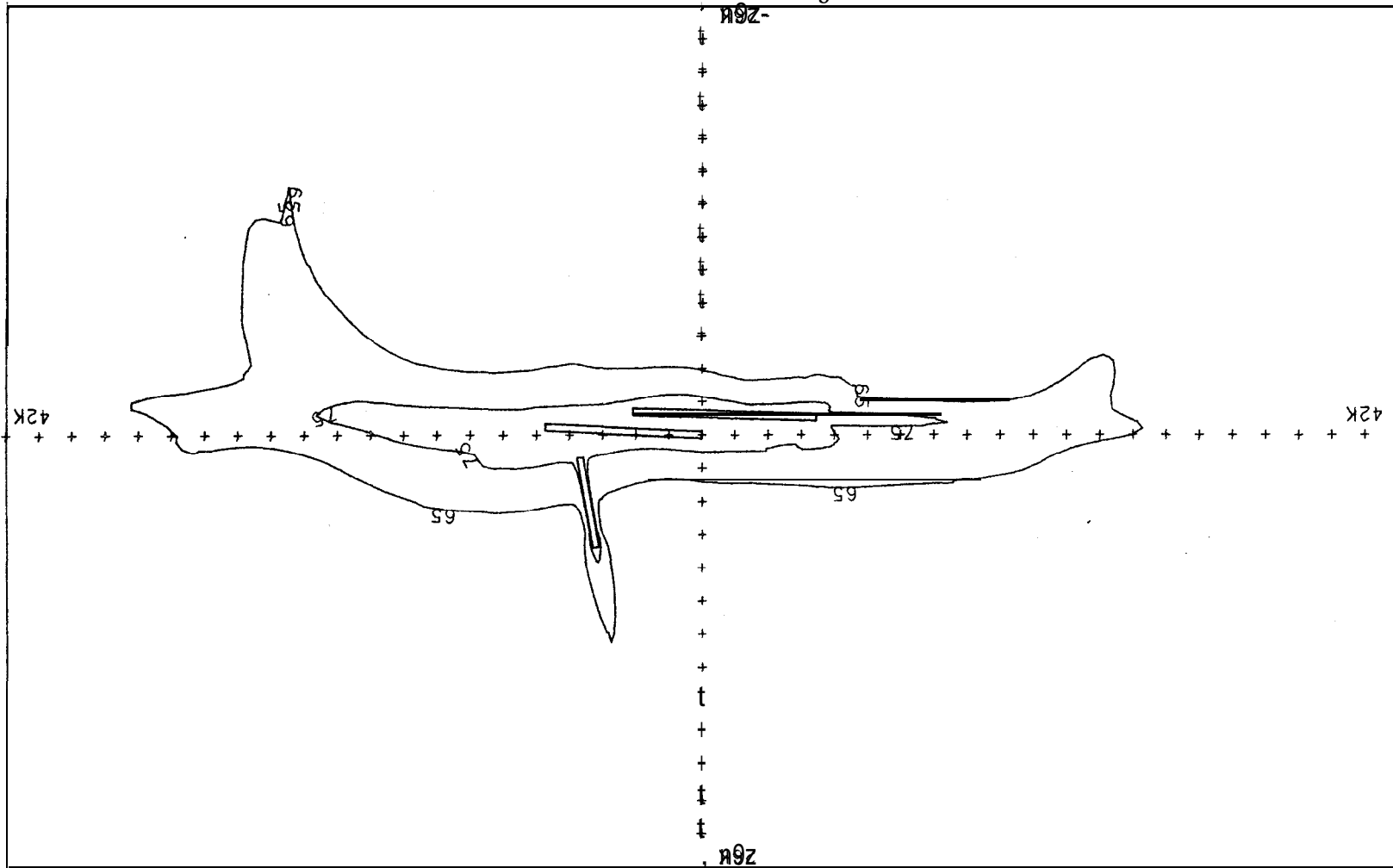
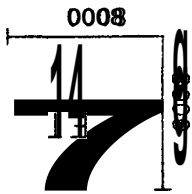
04 00733 5339 I 337

	NUMBER OF FULLTIGHTS	DAVE EVENING	NIGHT OPERATIONS
0-1	1-2	2-3	3-4
1-2	2-3	3-4	4-5
2-3	3-4	4-5	5-6
3-4	4-5	5-6	6-7
4-5	5-6	6-7	7-8
5-6	6-7	7-8	8-9
6-7	7-8	8-9	9-10

Figure 2

MODERN STRUCTURES AND ACTIVITIES

EXAMPLE 3
ANNUAL AVERAGE EXPOSURE AT AN AIRPORT
EXAMPLE 2
NOISE MODEL
VERSION 2
MAY 1983
MAY 1983
MAY 1983



SAMPLE CONTOUR PLOT

Figure 3

INTEGRATED NOISE MODEL - CONTOUR ANALYSIS REPORT

C O N T O U R - C A S E 1

ANNUAL AVERAGE EXPOSURE AT AN EXAMPLE OF A MEDIUM HUB AIRPORT
 AIRPORT - EXAMPLE (MHA) AREA = 14.78 METRIC = LIN
 LEVEL = 65.0 DB

1-7

I	I	ISLAND	PNT	X	Y	I	I	PNT	X	Y	I	I	PNT	X	Y	I
1	1					1	1				1	1				1
1	1	0	1	25000.	-14996.	1	1	2	25423.	-12923.	1	1	3	26351.	-13151.	1
1	1		4	26968.	-13040.	1	1	5	27385.	-12567.	1	1	6	27400.	-12500.	1
1	1		7	27515.	-11890.	1	1	8	27548.	-11719.	1	1	9	27567.	-11496.	1
1	1		10	27661.	-10937.	1	1	11	27724.	-10537.	1	1	12	27746.	-10156.	1
1	1		13	27753.	-9747.	1	1	14	27778.	-9375.	1	1	15	27800.	-9050.	1
1	1		16	27799.	-8594.	1	1	17	27795.	-8142.	1	1	18	27816.	-7812.	1
1	1		19	27801.	-7488.	1	1	20	27779.	-7031.	1	1	21	27719.	-6656.	1
1	1		22	27627.	-6250.	1	1	23	27452.	-5577.	1	1	24	27433.	-5469.	1
1	1		25	27427.	-5385.	1	1	26	27344.	-4988.	1	1	27	27281.	-4687.	1
1	1		28	27269.	-4613.	1	1	29	27208.	-4229.	1	1	30	27281.	-3951.	1
1	1		31	27631.	-3679.	1	1	32	27673.	-3454.	1	1	33	28125.	-3214.	1
1	1		34	28184.	-3184.	1	1	35	28304.	-3125.	1	1	36	28906.	-2988.	1
1	1		37	29436.	-2873.	1	1	38	29687.	-2836.	1	1	39	30030.	-2783.	1
1	1		40	30469.	-2698.	1	1	41	30771.	-2646.	1	1	42	30971.	-2595.	1
1	1		43	31250.	-2553.	1	1	44	31439.	-2532.	1	1	45	31641.	-2509.	1
1	1		46	31889.	-2486.	1	1	47	32031.	-2473.	1	1	48	32150.	-2463.	1
1	1		49	32422.	-2435.	1	1	50	32762.	-2395.	1	1	51	32812.	-2389.	1
1	1		52	32853.	-2384.	1	1	53	33080.	-2344.	1	1	54	33203.	-2306.	1
1	1		55	33477.	-2227.	1	1	56	33594.	-2178.	1	1	57	33830.	-2107.	1
1	1		58	33984.	-2068.	1	1	59	34083.	-2052.	1	1	60	34375.	-1967.	1
1	1		61	34416.	-1953.	1	1	62	34424.	-1612.	1	1	63	34421.	-1562.	1
1	1		64	34385.	-1552.	1	1	65	34375.	-1549.	1	1	66	34354.	-1541.	1
1	1		67	33908.	-1409.	1	1	68	33594.	-1295.	1	1	69	33385.	-1199.	1
1	1		70	33231.	-1144.	1	1	71	32812.	-885.	1	1	72	32627.	-781.	1
1	1		73	32266.	-546.	1	1	74	32031.	-318.	1	1	75	31663.	0.	1
1	1		76	31668.	418.	1	1	77	31362.	781.	1	1	78	31250.	875.	1
1	1		79	30738.	1051.	1	1	80	30469.	989.	1	1	81	30337.	913.	1
1	1		82	29687.	878.	1	1	83	29004.	781.	1	1	84	28920.	767.	1
1	1		85	28906.	769.	1	1	86	28895.	770.	1	1	87	28125.	679.	1
1	1		88	27476.	649.	1	1	89	27408.	653.	1	1	90	27344.	656.	1
1	1		91	27283.	660.	1	1	92	27227.	665.	1	1	93	26562.	682.	1
1	1		94	25805.	758.	1	1	95	25792.	759.	1	1	96	25781.	761.	1
1	1		97	25772.	762.	1	1	98	25764.	764.	1	1	99	25648.	781.	1
1	1		100	25000.	905.	1	1	101	24475.	1037.	1	1	102	24219.	1109.	1
1	1		103	23755.	1245.	1	1	104	23437.	1343.	1	1	105	23277.	1402.	1
1	1		106	22833.	1562.	1	1	107	22656.	1639.	1	1	108	22184.	1872.	1
1	1		109	21875.	2013.	1	1	110	21555.	2184.	1	1	111	21159.	2409.	1
1	1		112	20312.	2790.	1	1	113	19526.	3125.	1	1	114	18994.	3369.	1

ANNUAL AVERAGE EXPOSURE AT AN EXAMPLE OF A MEDIUM HUE AIRPORT
EXAMPLE (M11)

POPULATION IMPACT REPORT

METRIC		
NAME		
LEN		
CONTOUR	RESIDENCES	POPULATION
LEVEL	RESIDENCES	POPULATION
55.00	2775	9029

0 WARNING MESSAGES WERE PRODUCED BY THE IMPACT MODEL

Figure 5
POPULATION IMPACT REPORT

Detailed explanations of the model outputs and additional examples are contained in the User's Guide. This manual should be studied thoroughly by all prospective users.

I .2 AVAILABILITY

The **INM** version **3.8** package is currently available on **CDC** and **IBM** release tapes. The essential components required to operate the **INM** are:

- 0 The **INM** Data Base (included in the **INM** package)
- 0 The Census Tape (included in the **INM** package)
- 0 Airport characteristics and flight information (provided by the user).
- 0 The computer programs for the preprocessors (included in the **INM** package)
- 0 The computer program for the Model Program (included in the **INM** package)

The **INM** components are described in Section **3.0**. Specific hardware and software requirements for model operation are contained in Sections **4. I** and **5. I**.

The **INM** is available to users through the Office of Environment and Energy of the **FAA**. A loan agreement is required and a charge of **\$77** is assessed to cover computer tape reproduction and shipping costs. For this, the user receives:

- 0 A magnetic tape which includes the **INM** Data Base, necessary computer programs, control statements for execution, sample input and output;
- 0 A magnetic tape containing **1970** census data for the United States;
- 0 This Installation Instructions manual;
- 0 A User's Guide containing detailed instructions for preparing input to the model.

2.0 GENERAL REFERENCES

The **INM** documentation includes a number of manuals for the model itself and several reports on activities which support the **INM**. A bibliography of these documents, each of which may be obtained from the FAA, is given below:

1. Bishop, **D. E.** and Beckmann, **J.M.**, **Balt Beranek** and Newman, Inc., "Civil Aircraft Noise Data for Computation of Aircraft Noise Contours," Report No. **4440**, Project No. **0961** I, submitted to the **U. S.** Department of Transportation, November **1980** (Draft).
2. Potter, **R. C.** and Mills, **J. F.**, **Balt Beranek** and Newman Inc., "Aircraft Flight Profiles for Use in Aircraft Noise Prediction Models," Report No. **4594**, Project No. **0961** 2, submitted to the **U. S.** Department of Transportation, January **1981** (Draft).
3. **Gados, R. G.** and **Aldred, J. M.** "FAA Integrated Noise Model Validation, Phase I: Analysis of Integrated Noise Model Calculations for Air Carrier Flyovers," **FAA-EE-80-04**, December **1979**.
4. Federal Aviation Administration, "**INM**, Integrated Noise Model, Version 3 - User's Guide," November **1981**
5. Federal Aviation Administration, "**INM**, Integrated Noise Model, Version 3 - Programmer's Maintenance Manual," November **1981**.
6. Federal Aviation Administration, "**INM**, Integrated Noise Model, Version 3 - Executive Summary," planned document for **1982**.
7. Federal Aviation Administration, "**INM**, Integrated Noise Model, Version 3 - Data Base Manual," planned document for **1982**.
8. Federal Aviation Administration, "**INM**, Integrated Noise Model, Version 3 - Methodology Manual," planned document for **1982**.

3.0 INM COMPONENTS

The Integrated Noise Model consists of five major components:

- a. The **INM** Data Base, which contains common flight profiles and noise characteristics for numerous aircraft types. The noise file for each aircraft consists of ~~noise vs slant range~~ (distance between airplane and the listener) curves for several thrust settings.
- b. The Census Tape, which contains ~~1970~~ population statistics for the United States. The tape is required only if **IMPACT** Reports are to be produced.
- c. The user input file, which describes specific airport characteristics (altitude, temperature and wind conditions for the airport as well as number, length, and orientation of runways); types and numbers of aircraft operating during various times of day; arrival, departure and touch-and-go flight paths; and takeoff and landing profiles. The user also describes the type of analysis to be performed (grid or contour) and exercises available output options. In addition, user options allow changes to the data base, if necessary. Detailed instructions for preparation of the user input are contained in the User's Guide.
- d. The preprocessors, which prepare input data for the model program. These include:
 - (1) The Data Base ~~Unformatting~~ Routine, which transforms the **INM** data base from a formatted structure to the unformatted structure required by the model program.

(2) The Census Filter Routine, which ~~extracts~~ from the Census Tape that data needed for the area around the airport(s) to be studied. The user provides the coordinates of the window of the area to be studied.

- e. The Model Program, which interacts with the **INM** Data Base, the local census data file and the user input to perform the required analyses and to produce the requested reports.

The general relationship among the **INM** components is illustrated in Figure 6.

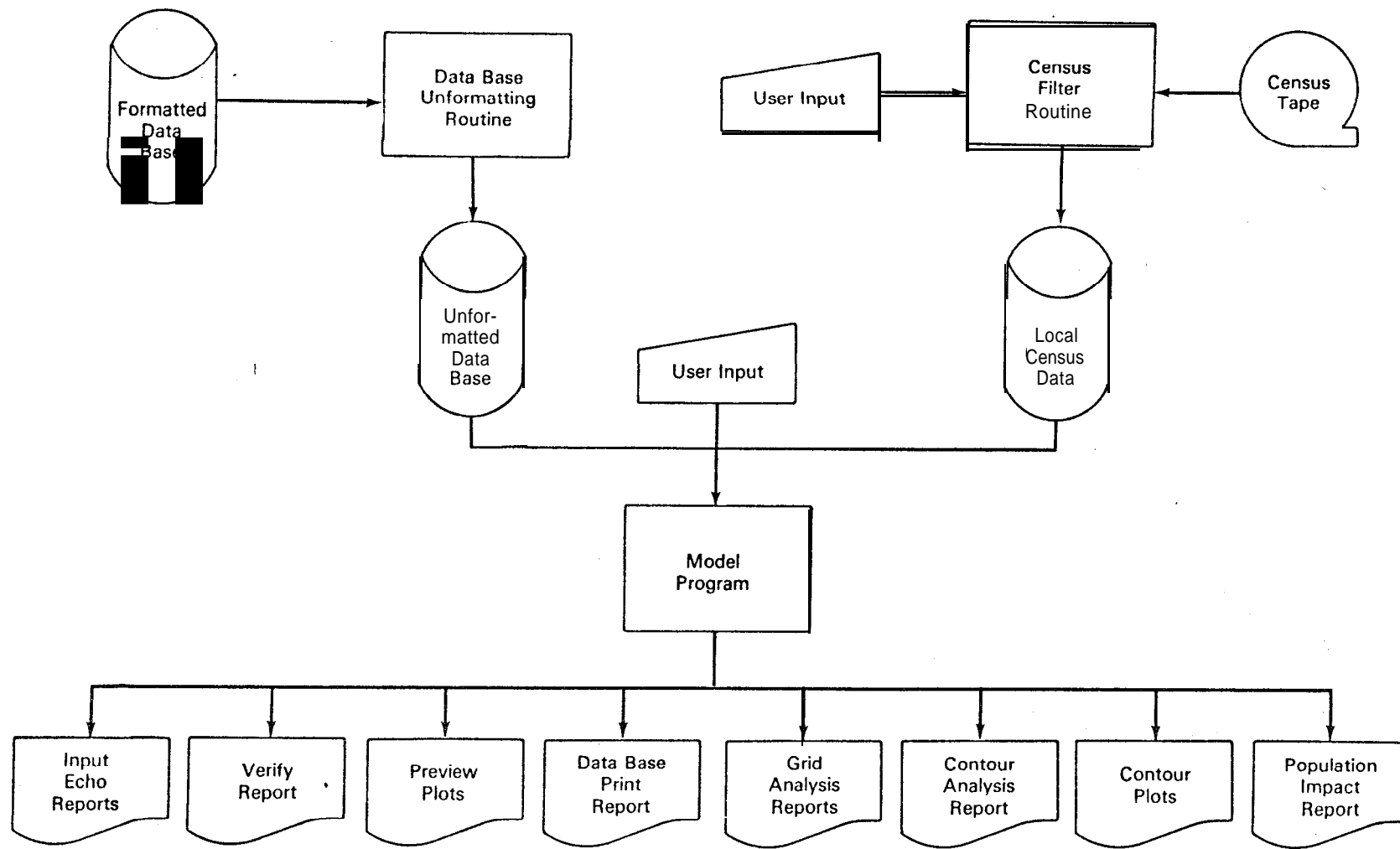


Figure 6
RELATIONSHIPS OF THE INM COMPONENTS

4.0 CDC VERSION

4.1 HARDWARE AND SOFTWARE REQUIREMENTS

The CDC version of the Integrated Noise Model operates on a 6000 series or Cyber 170 series central processing unit, with a minimum of 100,000 words of available memory and adequate direct access storage to maintain the files described in Section 4.2. A nine track tape drive is required to read in the INM release tape. A CalComp plotter is required to produce plots. If one is not available, modifications are required to some of the job streams. The modifications are described in Section 4.3.

The following software is required:

- 0 APEX operating system. If a system other than APEX is used, some modifications may have to be made to the control language.
- 0 FORTRAN Extended Version 4.0 compiler
- 0 CalComp plotter compatible subroutine library (if a plotter is to be used).

4.2 RELEASE TAPE AND CENSUS TAPE

The characteristics of the CDC release tape are as follows:

- 0 9 track
- 0 1600 bpi density
- 0 Unlabelled
- 0 Volume Serial Number as shown on reel
- 0 EBCDIC
- 0 Format as below:
 - Files 1 through 9 - fixed block, 80 characters per record, 64 records per block
 - File 10 - fixed block, 132 characters per record, 38 records per block.

The structure and content of the release tape are shown in Table I.

TABLE I
CDC RELEASE TAPE DESCRIPTION

File	Description	N u m b e r of Records*	Remarks
1	Control deck to read the remainder of the tape, compile and load the programs & load the data (CDCREL)	46	All control decks are constructed for execution in a remote batch mode. If interactive execution is planned, the user must make the necessary modifications.
2	Control deck to execute Model Program (CDCMEX)	25	
31	Control deck to execute Census Filter Routine (CDCCEX)	17	
4	Source Code for Model Program (EXEC)	27,770	EXEC requires 50K words to load 81K words to execute if overlaid
5	Source Code for Census Filter Routine (CENSUS)	220	CENSUS requires 18K words to load 13K words to execute
6	Source Code for Data Base Unformatting Routine (DBUNF)	147	DBUNF requires approx. 16K words to load, 11K words to execute
7	Formatted Data Base (INMDB)	4,136	INM Data Base
8	Sample Case for Model Input (INMINP)	144	Sample user input
9	Sample Census Input (INMCIP)	1	Sample user input for area around airport in sample case.
10	Sample Case Output	2,651	

*Files 1 through 10 have 80 characters per record and File 10 has 132 characters per record.

The Census Tape consists of one file written in a format which is acceptable on all five of the computer systems on which the model is to operate. The characteristics of the tape are as follows:

- 0 9 track
- 0 1600 bpi density
- 0 Unlabelled
- 0 Volume Serial Number as shown on reel
- 0 EBCDIC
- 0 Format is fixed block lengths with 48 characters per record and 100 records per block.

4.3 INSTALLATION PROCEDURES

The table below presents the general steps involved in installing the model on any system.

SUMMARY OF INSTALLATION PROCEDURES

<u>STEPS</u>	<u>ACTIVITY</u>
STEP 1.	Read the control statements stream contained in the first record on the release tape.
STEP 2.	Edit the control stream for your installation.
STEP 3.	Execute the control stream to compile and load the remainder of the release tape.
STEP 4.	Modify the control stream files for the Census Filter Routine and the Model Program for your installation.
STEP 5.	Test the Census Filter Routine by executing the sample census input.
STEP 6.	Test the Model Program by executing the sample case.

The following paragraphs detail the steps for installing the model via remote entry batch processing on the CDC system. The control streams presented in this section were tested on the United Computing Services, Inc. CYBER 175 operating under APEX, a system similar to SCOPE. Changes may be required to the control streams to install the model under either the SCOPE or NOS operating systems. For example, UNBLOCK is an APEX command to copy and ~~de~~block a file.

STEP 1. Execute the following sequence of control statements in order to make the installation decks available:

```
TPREAD. (Job name)
ACCOUNT,XXXXXXX. (As required by installation)
REQUEST,T,VSN=NNNNN,F=S,LB=AU,CV=EB,D=PE,NT. (Enter
VSN of release tape)
UNBLOCK (T,CDCREL,LL=80,N= 1)
PUT,CDCREL.
COST.
DFD,DAY,R.
EXIT.
NOEXIT.
COST.
DFD,DAY,R.
```

The above statements will read in the first record from the release tape (see Figure 7). The first record contains the control statements required to process the remaining records, i.e., to copy the control streams, compile and load the Model Program and its preprocessors, copy the INM Data Base, create the unformatted data base and copy the input and output for the sample case (see Figure 8).

STEP 2. Edit the first record from the release tape (now on file CDCREL) and make the following modifications to it:

- a. In line 1 IO, enter account information as required by the installation (in place of XXXXXXXX).

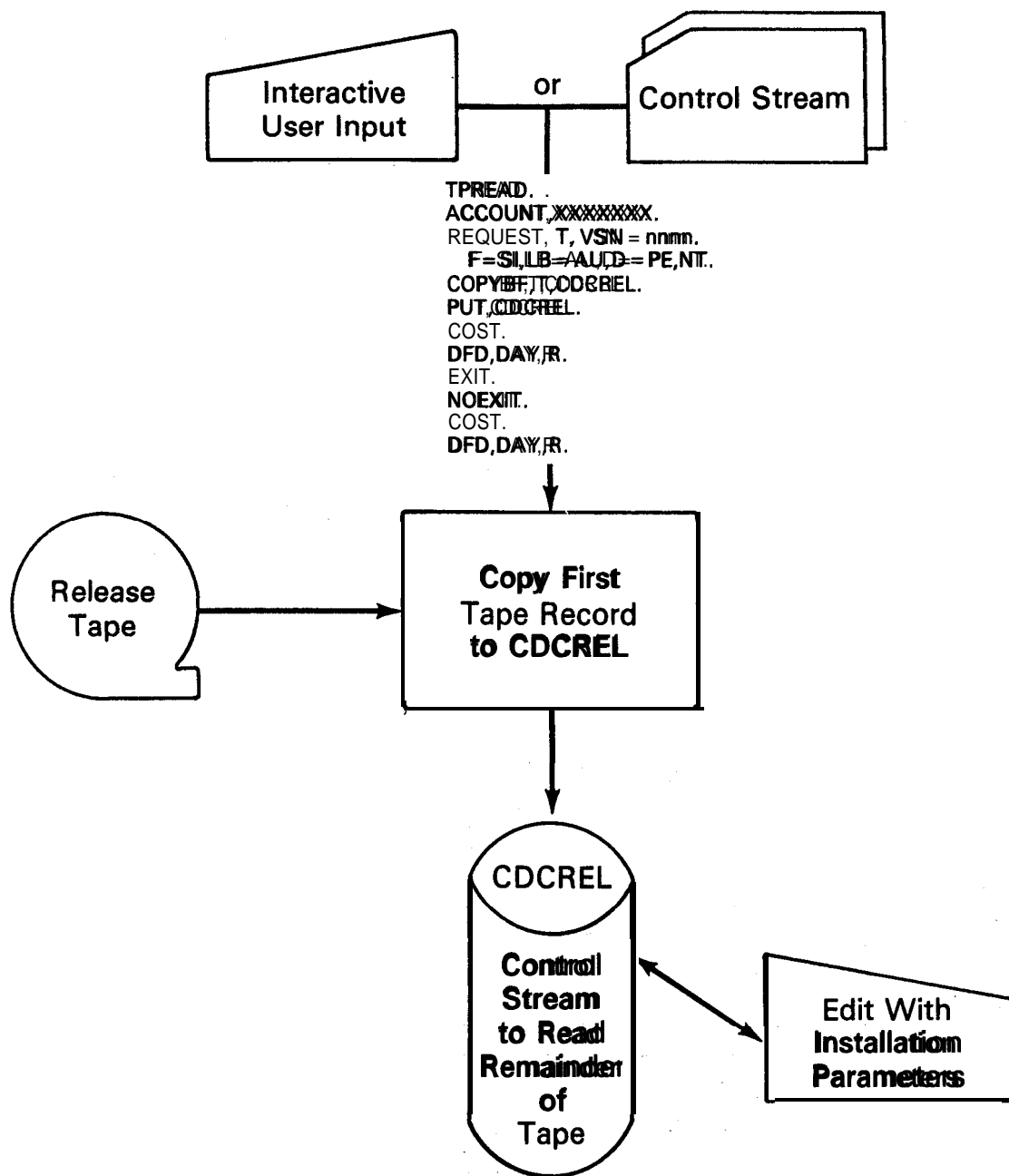


Figure 7

GENERAL FLOW DIAGRAM FOR CREATING CDC CONTROL STREAM
TO READ REMAINDER OF THE RELEASE TAPE

```

00100 CDCREL,CE#177000,JB00.
00110 ACCOUNT,XXXXXXXX.
00120 REQUEST,II,WSN:=NNNN,FS,LL=AU,OV=BB,B=PE,NT.
00130 UNBLOCK(T,INHP,LL=80,N=1,MR)
00140 UNBLOCK(T,CDCMEX,LL=800,N=1,MR)
00150 PUT,CDCMEX.
00160 UNBLOCK(T,CDCMEX,LL=800,N=1,MR)
00170 PUT,CDCMEX.
00180 UNBLOCK(T,EXEC,LL=800,N=1,MR)
00190 REWIND,EXEC.
00200 FTN40,II=EXEC,RS=3,B=INMV3.
00210 PUT,INMV3. *SAVE MODEL PROGRAM
00220 RETURN,EXEC,INMV3.
00230 UNBLOCK(T,CENFUS,LL=800,N=1,MR)
00240 REWIND,CENFUS.

00250 FTN40,II=CENFUS,RS=3,B=INMCEN.
00260 PUT,INMCEN. *SAVE CENSUS FILTER ROUTINE
00270 RETURN,CENFUS,INMCEN.
00280 UNBLOCK(T,DBUNF,LL=80,N=1,MR)
00290 REWIND,DBUNF.
00300 FTN40,II=DBUNF,RS=3,B=INMUF.
00310 PUT,INMUF. *SAVE UNFORMATTING ROUTINE
00320 RETURN,DBUNF.
00330 UNBLOCK(T,TAPE20,LL=80,N=1,MR)
00340 PUT,TAPE20,INMDB. *SAVE DATA BASE
00350 REWIND,TAPE20.
00360 REWIND,INMUF.
00370 LOAD(INMUF)
00380 EXECUTE. *CREATE UNFORMATTED DATA BASE
00390 PUT,TAPE21,INMDB. *SAVE UNFORMATTED DATA BASE
00400 RETURN,INMUF,TAPE20,TAPE21.
00410 UNBLOCK(T,INMINP,LL=80,N=1,MR)
00420 PUT,INMINP. *SAVE CASE INPUT BECK
00430 RETURN,INMINP.
00440 UNBLOCK(T,INMCIR,LL=80,N=1,MR)

```

Figure 8

CDC CONTROL STREAM CONTAINED ON THE
FIRST RECORD OF THE RELEASE TAPE

(Part 1 of 2)

```

00450 PUT,IMHCIP. *SAVE CENSUS FILTER ROUTINE INPUT DECK
00460 RETURN,IMHCIP.
00470 UNBLOCK(T,OUT99,LL=132,N=1,NB) *PRINT SAMPLE OUTPUT
00480 PUT,OUT99.
00490 COST.
00500 DFD,DAY,R.
00510 EXIT.
00520 NOEXIT.
00530 PUT,OUTPUT=OUTVD.
00540 COST.
00550 DFD,DAY,R.

```

Figure 8
 CDC CONTROL STREAM CONTAINED ON THE
 FIRST RECORD OF THE RELEASE TAPE
 (Part 2 of 2)

- b. In line ~~120~~, enter the Volume Serial Number of the release tape (in place of ~~NNNNN~~).
- c. If it is desirable to have copies of the source code for the Model Program and the preprocessors saved on disk, the following control statements should be added, in numerical order, to **CDCREL**:

```
002 15 PUT, EXEC/D. *SAVE MODEL PROGRAM
                        SOURCE
```

```
00265 PUT, CENSUS. *SAVE CENSUS FILTER ROUTINE
                        SOURCE
```

```
003 15 PUT, DBUNF. *SAVE DATA BASE
                    UNFORMATTING ROUTINE
                    SOURCE
```

STEP 3.

After making the above modifications, execute the job named **CDCREL** to compile and load the remainder of the release tape. A general flow diagram of the loading process resulting from execution of **CDCREL** is shown in Figure 9.

STEP 4.

Modify the control statement streams for executing the, Census Filter Routine and the Model Program which are contained on files **CDCCEX** and **CDCMEX**, respectively. Listings of each control statement stream are shown in Figures 10 and 11. In each stream in line 1 10 enter the account number for **XXXXXXX**.

In **CDCCEX**, in line ~~140~~, enter the Volume Serial Number for the Census Tape (in place of ~~NNNNN~~). The Census Tape is supplied with the **INM** package.

In **CDCMEX** make the following additional changes:

- a. If no plotter is available on the installation system, delete lines ~~160~~ and ~~200~~ and delete the phrase "~~LIB=XXXXXX,~~" from line ~~170~~.

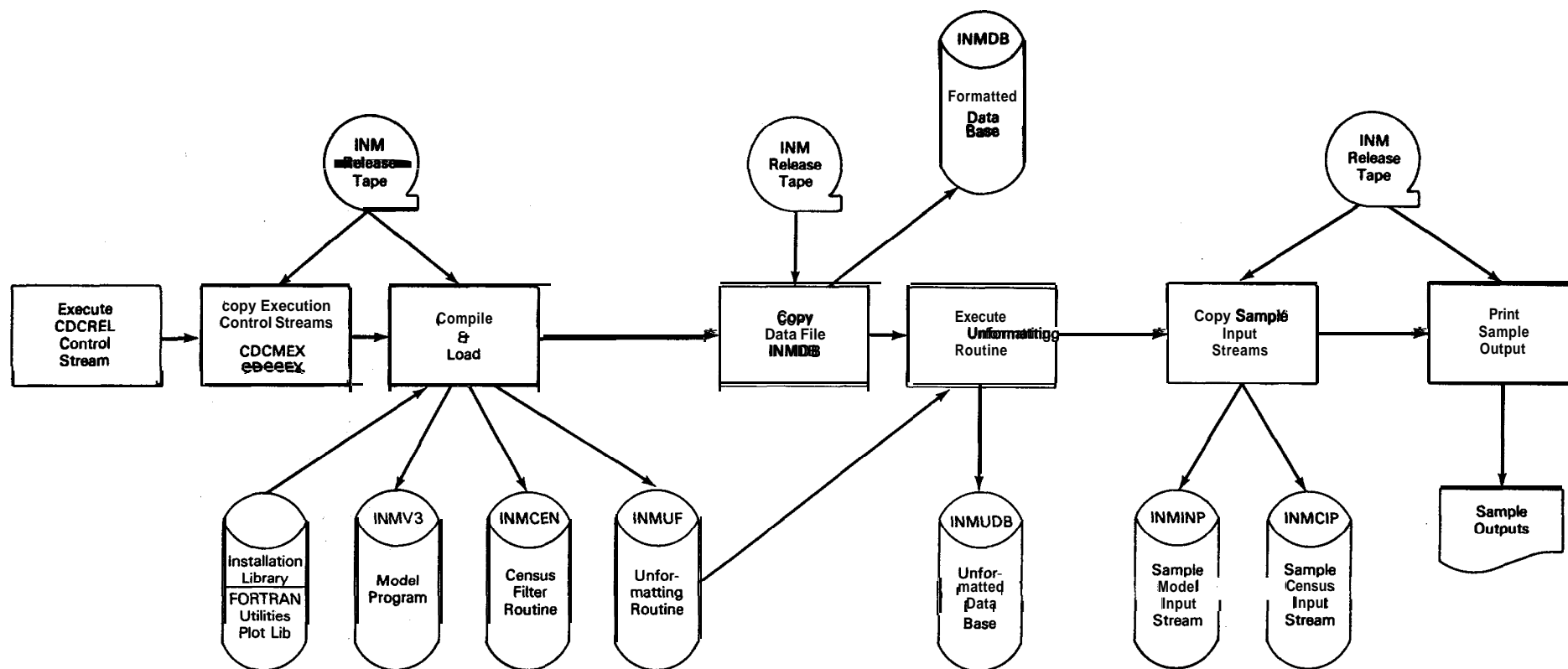


Figure 9
GENERAL FLOW DIAGRAM OF THE LOADING
PROCESS OF FILE CDCREL


```

00100 CDCMEX,TIME00.
00110 ACCOUNT,XXXXXXX.
00120 GET,TAPE2=INMINP. *INMINP IS SAMPLE USER INPUT
00130 GET,TAPE3=INMUDB. *INMUDB IS UNFORMATTED DATA BASE
00140 GET,TAPE9=INNLOC. *INNLOC IS SAMPLE LOCAL CENSUS DATA
00150 GET,INMV3. *INMV3 IS MODEL PROGRAM
00160 GET,XXXXXX/LIBRARY. *GET CALCOMP LIBRARY
00170 LBSET(11 BB*XXXXXX,USEP=16W.SB$)
00180 LOAD(INMV3)
00190 EXECUTE.
00200 RETURN,XXXXXX.
00210 RETURN,TAPE2,TAPE3,INMV3.
00220 RETURN,TAPE9.
00230 PUT,TAPE22=MSGRD. *MSGRD IS SAVED GRID FILE
00240 PUT,TAPE8=PLTFIL. *PLTFIL IS THE PLOT FILE
00250 COST.
00260 PUT,OUTPUT=EXOUT.
00270 DEF,DAY,R.
00280 EXIT.
00290 NOEXIT.
00300 COST.
00310 PUT, TAPE22=MSGRD.
00320 PUT,TAPE8=PLTFIL.
00330 PUT,OUTPUT=EXOUT.
00340 DEF,DAY,R.

```

Figure 11
CDCMEX (MODEL PROGRAM EXECUTION)

- b. If a **CalComp** plotter is available on the system, enter the installation identification for the library plot package in lines **160**, **170** and **200** (in place of **XXXXXX**). For example, at United Computing Systems, "**CALC40**" is used.

STEP 5.

Execute a sample Census Filter run by executing **CDCCEX** with parameters as included in the control statement stream. This will result in the use of the sample input file called **INMCIP**. The output file (**INMLOC**) created by this run should be used as input to the Model Program. The output expected from this run is shown below.

THE FOLLOWING STATES ARE INCLUDED IN THE CENSUS WINDOW

	NEW YORK
	NEW JERSEY
	PENNSYLVANIA
	DELAWARE
	MARYLAND
3422043	PEOPLE WITHIN THE CENSUS WINDOW
1139448	RESIDENCES WITHIN THE CENSUS WINDOW
135753	RECORDS WERE READ FROM THE CENSUS TAPE
3594	RECORDS WERE EXTRACTED

A general flow diagram of execution of **CDCCEX** is shown in Figure **12**.

STEP 6.

Execute a sample Model Program run as follows:

- a. If no plotter is available, modify the sample user input file **INMINP** so that it contains no requests for plots within the PROCESS section. In other words, delete the following line:

PLOT SIZE | | 8.5 SCALE = 12000

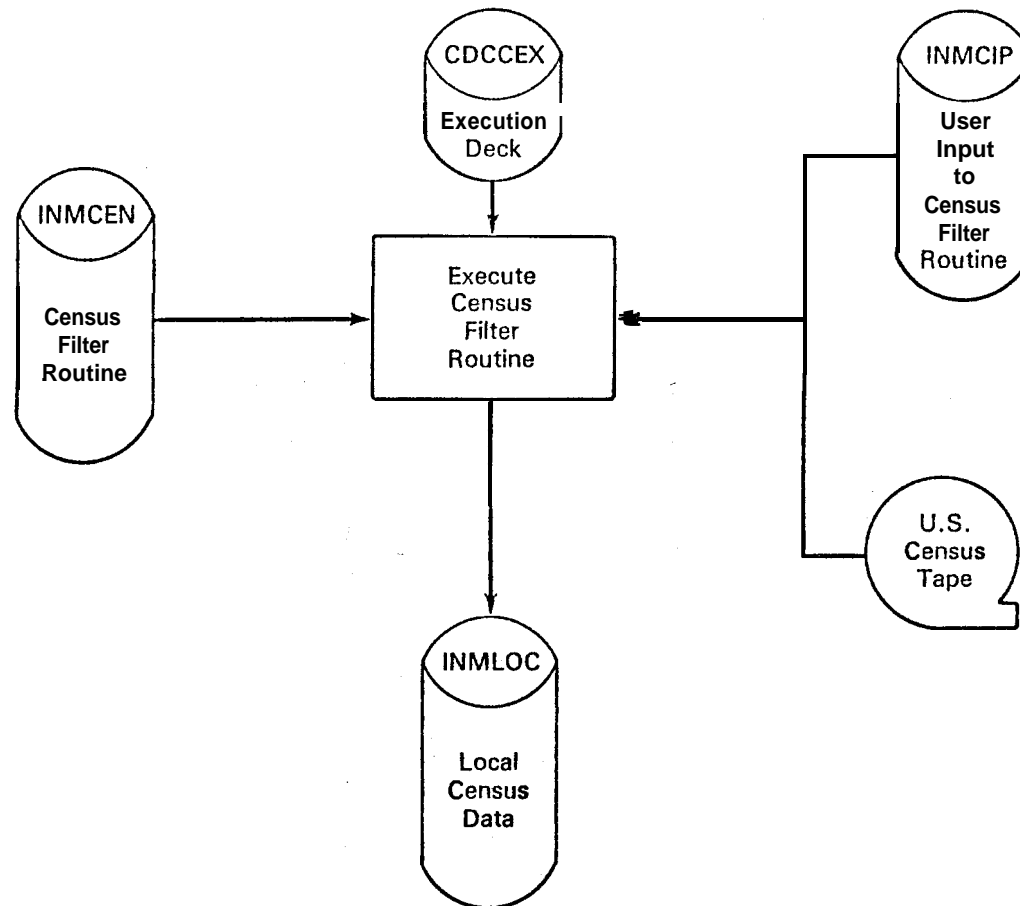


Figure 12

GENERAL FLOW DIAGRAM CDC CENSUS FILTER EXECUTION

- b. Execute **CDCMEX** with parameters as included in the control statement stream. This will result in the use of the sample input file **INMINP** and the local Census File **INMLOC** which was produced in **STEP 5**. The output from this run should be identical to the sample output on file **#10** of the release tape.

A general flow diagram of execution of **CDCMEX** is shown in Figure **13**.

4.4 EXECUTION PROCEDURES

After the installation process has been completed successfully, the user must **accomplish** the following steps in order to execute the Integrated Noise Model using other than the sample input data provided on the release tape:

- a. Determine the geographic coordinates of the window to be used to extract data from the Census Tape. The window coordinates are defined below:
- window lower left longitude
 - window lower left latitude
 - window upper right longitude
 - window upper right latitude.

Each point must be given in degrees, minutes and seconds, with East longitudes and North latitudes being positive degrees and West longitudes and South latitudes being negative degrees. These values must be placed on the census input file in **(F5.0, F3.0, F4.1)** format. Identify the name of the census input file.

It is suggested that a window covering **15** miles in each direction from the airport center be used to obtain a reasonable area of impact. The value of **15** miles is roughly **.25** degrees or **15** minutes of latitude or longitude within the **U. S.**

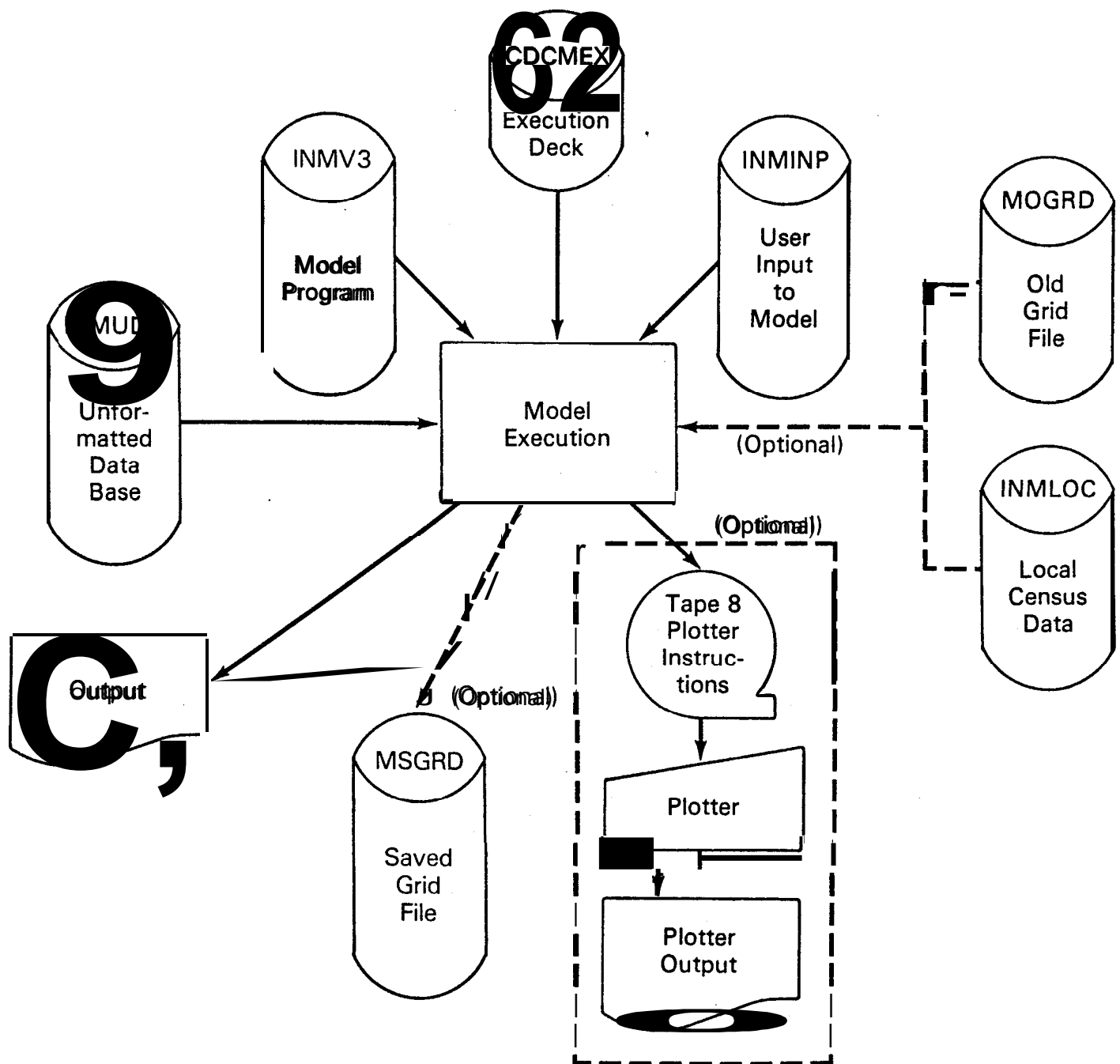


Figure 13
GENERAL FLOW DIAGRAM
CDC MODEL PROGRAM EXECUTION

- b. In line 120 of the control statement stream **CDCCEX** change **"INMCIP"** to the appropriate file name for the census input file and in line 190 **"INMLOC"** to the file on which the local Census Data is to reside. Then execute the Census Filter Routine by submitting the revised **CDCCEX** file. If an appropriate window has been selected, this routine will not need to be executed again for the given airport. However, if a study is done for another airport, a local census file for that airport must be created.
- c. Using the instructions given in the User's Guide, generate the required input data for the model. Identify the name of the input file to be used.
- d. Determine the input and output files required for the user input file just created. Table 2 describes all of the possible files and indicates when they are required.
- e. Change the control statement stream **CDCMEX** to reference the appropriate files.
- 1 - In line 120 change **"INMINP"** to the appropriate file in which the user input data reside.
 - 2 - If **TAPES** is required, in line 140 change **"INMLOC"** to the appropriate name for the local census data. If **TAPES** is not required, delete lines 140 and 220.
 - 3 - If **TAPE21** is required, add after line 140 the line **"00145 GET, TAPE21 =MOGRD."** where **"MOGRD "** is replaced by the appropriate file name for the old grid file. Also add after line 220 **"00225 RETURN, TAPE21."**
 - 4 - If **TAPE22** is required, in lines 230 and 3 IO change **"MSGRD"** to the appropriate file name for the grid file to be saved. If **TAPE22** is not required, delete lines 230 and 3 IO.
 - 5 - If **TAPE8** is required, in lines 240 and 320 substitute the appropriate file name for **"PLTFIL"**. If **TAPE8** is not required, delete lines 240 and 320.
- f. Execute the Model Program by submitting the corrected **CDCMEX** file.

TABLE 2
CDC INPUT AND OUTPUT FILES FOR THE MODEL PROGRAM

<u>FILE</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>COMMENTS</u>
TAPE2	Input	User Input Data	Always required; created by user.
TAPE3	Input	Unformatted Data Base	Always required; created during installation.
TAPES	Input	Local Census Data	Required only if IMPACT Reports are requested; created by executing Census Filter Routine.
TAPE21	Input	Old Grid File	Required only if retrieving contour data from an old file; created by saving contours during a previous run.
TAPE22	output	Saved Grid File	Required only if saving contours.
TAPE8	output	Plotter Tape for PREVIEW and PLOT	Required only if requesting either PREVIEW or PLOT. The model uses the same tape for both types of plots but the model can be changed by the maintenance programmer to produce separate plotter tapes. Some systems such as the one at UCS allows TAPE8 to be a disk file rather than a tape.

it stream **CDCCEX** change **"INMCIP"**
the census input file and in line 190
e local Census Data is to reside. Then
e by submitting the revised **CDCCEX**
as been selected, this routine will not
a given airport. However, if a study is
ll census file for that airport must be

the User's Guide, generate the required
fy the name of the input file to be used.

files required for the user input file just
of the possible files and indicates when

stream **CDCMEX** to reference the appro-

INP" to the appropriate file in which the

1 line 140 change **"INMLOC"** to the appro-
sus data. If TAPES is not required, delete

, add after line 140 the line **"00145 GET,**
LOGRD 'I is replaced by the appropriate file
Also add after line 220 **"00225 RETURN,**

in lines 230 and 3 IO change **"MSGRD"** to the
he grid file to be saved. If **TAPE22** is not
id 310.

l, in lines 240 and 320 substitute the appro-
"IL". If **TAPE8** is not required, delete lines

n by submitting the corrected **CDCMEX** file.

(CDC) manuals may be useful in installing

ing Systems, Inc. (2525 Washington,
(s ma' p useful in installing the mod&l on the

5.0 IBM VERSION

5.1 HARDWARE AND SOFTWARE REQUIREMENTS

The IBM version of the Integrated Noise Model operates on a **S/360-370** series central processing unit, with a minimum of **832K** bytes of available memory and adequate direct access storage to maintain the files described in Section 5.2. A nine track tape drive is required to read in the **INM** release tape. A **CalComp** platter is required to produce plots. If one is not available, modifications are required to some of the Job Control Language (JCL). The modifications are described in Section 5.3.

The following software is required:

- 0 **OS/VS2** (Operating System/Virtual Storage, Version 2) operating system. If other than **OS/VS2**, some modifications may have to be made to the JCL.
- 0 **FORTRAN G** compiler
- 0 **CalComp** plotter compatible subroutine library (if plotter is to be used).

5.2 RELEASE TAPE AND CENSUS TAPE

The characteristics of the IBM release tape are as follows:

- o 9 track
- o **1600 bpi** density
- o **Unlabelled**
- o Volume Serial Number as shown on reel
- o **EBCDIC**
- o Format as below:
 - Files 1 through 9 - **FB, LRECL = 80, BLKSIZE = 10000**
 - File 10 - **FB, LRECL = 132, BLKSIZE = 9900**

Team CDCCEX change "INMCIP"
census input file and in line 190
al Census Data is to reside. Then
submitting the revised CDCCEX
een selected, this routine will not
an airport. However, if a study is
nsus file for that airport must be

User's Guide, generate the required
ne name of the input file to be used.

s required for the user input file just
the possible files and indicates when

tam CDCMEX to reference the appro-

" to the appropriate file in which the

e 140 change "INMLOC" to the APPF0-
data. If TAPE9 is not required, delete

Id after line 140 the line "00145 GET,
RD I" is replaced by the appropriate file
add after line 220 "00225 RETURN,

ines 230 and 3 IO change "MSGRD" to the
grid file to be saved. If TAPE22 is not
IO.

, lines 240 and 320 substitute the APPF0-
t. If TAPES is not required, delete lines

submitting the corrected CDCMEX file.

se tape are shown in Table 3.

ritten in a format which is acceptable on all
which the model is to operate. The
ws:

on reel

with 48 characters per record and 100

ing installation of the model from the
in Section 5.3.

involved in installing the model on any

TION PROCEDURES

(CL) contained in the first record on

load the remainder of the release

TABLE 3
IBM RELEASE TAPE DESCRIPTION

<u>File</u>	<u>Description</u>	<u>Number of Records*</u>	<u>Remarks</u>
1	Control deck to read the remainder of the tape, compile and load the programs & load the data (IBMREL)	123	All control decks are constructed for execution in a remote batch mode. If interactive execution is planned, the user must make the necessary modifications.
21	Control deck to execute Mode I Program (IBMMEX)	57	
3	Control deck to execute Census Filter Routine (IBMCEX)	13	
4	Source Code for Model Program (EXE0)	27,708	EXEC requires 684K words to execute
5	Source Code for Census Filter Routine (CENSUS)	220	CENSUS requires 80K words to execute
6	Source Code for Data Base Unformatting Routine (DBUNF)	147	DBUNF requires 52K words to execute
7	Formatted Data Base (INMDB)	4,136	INM Data Base
8	Sample Case for Model Input (INMINP)	144	Sample user input
9	Sample Census Input (INMCIP)	1	Sample user input for area around airport in sample case.
10	Sample Case Output	2,648	

*Files 1 through 9 have 80 characters per record and File 10 has 132 characters per record.

In CDCCEX change "INMCIP" to the census input file and in line 190 Census Data is to reside. Then submitting the revised CDCCEX If selected, this routine will not airport. However, if a study is file for that airport must be

er's Guide, generate the required name of the input file to be used.

squired for the user input file just possible files and indicates when

1 CDCMEX to reference the appro-

3 the appropriate file in which the

40 change "INMLOC" to the appro- ra. If TAPES is not required, delete

after line 140 the line "00145 GET, 1" is replaced by the appropriate file dd after line 220 "00225 RETURN,

s 230 and 3 10 change "MSGRD" to the d file to be saved. If TAPE22 is not

nes 240 and 320 substitute the appro- If TAPE8 is not required, delete lines

Submitting the corrected CDCMEX file.

INMLOC	unformatted data base	N/A	VBS	536	540	130	50
MSGRD	Sequential file of local census data	N/A	VBS	44	6164	12	
INMSC3 (Optional)	Sequential file of data output from a Contour Analysis. Saved for a later retrieval.	N/A	VBS	84	88	7000	
	Partitioned data set of source codes for the Census Filter Routine, Data Base Unformatting Routine and the Model Program	CENSUS, DBUNF, EXEC	FB	80	6160	500	

STEP 4. Modify the JCL files for the Census Filter Routine and the Model Program for your installation.

STEP 5. Test the Census Filter Routine by executing the sample census input.

STEP 6. Test the Model Program by executing the sample run.

The following paragraphs detail the steps for installing the model via remote entry batch processing on the IBM system. The JCL presented in this section was tested on the Boeing Computer Services Company (BCS) IBM 370 Model 168 computer operating under OS/VS2 (Operating System/Virtual Storage, Version 2). Changes may be required to the JCL to install the model under other operating systems.

At BCS, the naming convention for direct access data sets is ACCOUNT.NAME.TYPE, where ACCOUNT is the user account number, NAME is a user-selected file name and TYPE is a qualifier such as DATA, FORT, CNTL, LIB. A tape file requires only a name of the form ACCOUNT.NAME. For example, in the JCL presented in this section **FAA130.INMUDB.DATA** is a sequential data set, **FAA130.INMCNT.CNTL (IBMCEX)** is a member of a partitioned data set, and **FAA130.IBMV3** is a tape file. When installing the model on another system, modify the file names to meet the requirements at that installation. Note that in the examples all user file names begin with **FAA130** making it easy to modify the file names via an editor.

In the sample JCL, the release tape has been named **FAA130.IBMV3** for all files on the tape and is identified as volume serial number **W28140**. Obtain the name and serial number of the release tape at your installation and modify the JCL appropriately.

STEP 1. Modify the file names, tape number and tape name in the following JCL and execute it in order to make the installation decks available:

~~DDCCEX~~ change "INMCIP"
input file and in line 190
;us Data is to reside. Then
tting the revised ~~DDCCEX~~
ected, this routine will not
work. However, if a study is
le for that airport must be

Guide, generate the required
of the input file to be used.

red for the user input file just
sible files and indicates when

~~CMEX~~ to reference the ~~APPF8-~~

appropriate file in which the

change "INMLCG" to the ~~APPF8-~~
If TAPES is not required, delete

line 140 the line "00145 GET,
; replaced by the appropriate file
after line 220 "00225 RETURN,

and 3 IO change "MSGRD" to the
le to be saved. If TAPE22 is not

240 and 320 substitute the ~~APPF8-~~
APES is not required, delete lines

itting the corrected ~~DDCMEX~~ file.

GENER
(SOUT=A

NAME=I
IBMREL
=2400-4, DISP=(OLD,KEEP), DSN=FAA130.

, LABEL=(1,NL),
BLKSIZE=1000, BUFNO=2, RECFM=FB,

AA130 INMCNT.CNTL, UNIT=SYSSTS,

IRECL=80, BLKSIZE=6160),

ad in the first record from the release tape (see
the JCL to process the remaining records,
compile and load the Model Program and its
e, create the unformatted data base, and
le case. Figure 1.5 contains a listing of the

om the release tape (now on file IBMREL
ata set INMCNT) and make the following

Modify the file names, tape number, and
tallation. Note that ~~SYS1.BCSLIB~~ and
braries needed for linkage of the FOR-
ou must substitute your installation

(a) lat on the installation system, delete line

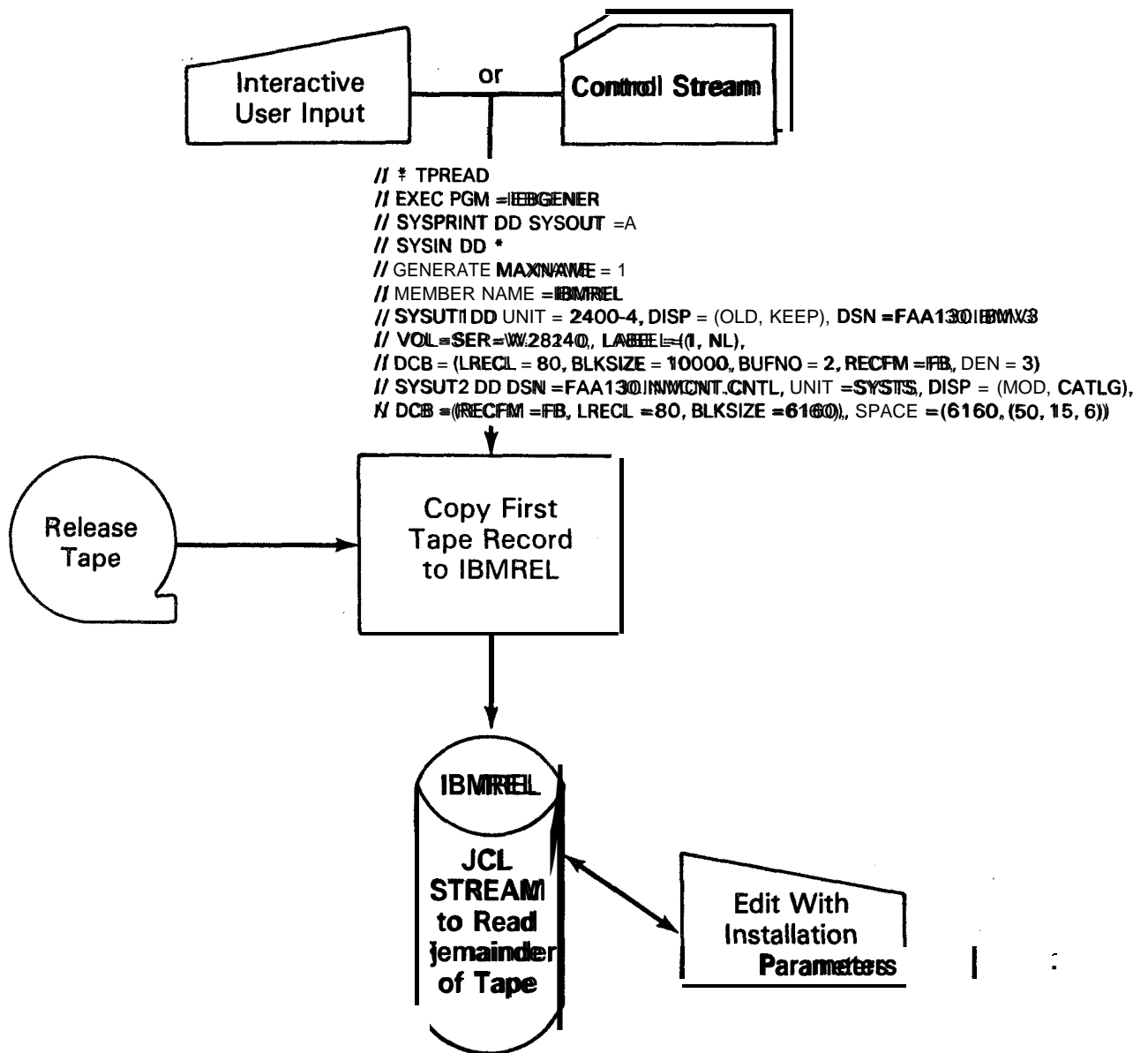


Figure 14

GENERAL FLOW DIAGRAM FOR CREATING IBM JCL
TO READ REMAINDER OF THE RELEASE TAPE

09360 (GENERAL) PLANKTONIC
00370 MEMBER NAME=HBMEX

```

00380 // *
00380 // * COMPARE AND INDEX PROGRAM
00400 //STEP1 EX333 FORGET, EG19N=256K, PARM, H06T=NOBURE3E, N0MAP',
00401 // CONT-FORGET=BEEN, PARM, LKED=NOI-ST, N0MAP',
00410 // CONT-DKED=BEEN, L17, 53BPU, FOR1-)
00420 //FOR1,SYSDN DD 588CE=(CXY1,(10,1))
00430 ///FOR1,SYSDN DD DSN=AA150-MR#01,UNIT=2400-0005,PSR=0100, (PASS),
00440 // V06558R#4288 RD, L1PEU=(4, NL),
00450 // DCB=88C1CF=FBFB08C-880808SSZB=100#00,8-UTENO=2, IEN=3)
00460 ///LKED,SYSDN DD DSN=SYSI, FORTU181USPFSHR
00470 // DD DSN=SYSI, BESIUBRKS=SSHR
00480 // DD DSN=SYSI, SCULIB8, BISI=SSHR
00490 // DD DSN=SYSAVSABRHL1, LOAD, L1SP=SSHR
00500 //WEB=SYSTIMON DD DSN=SYSAVS001-1111-1111 (HMMY) UNIT=SYSTIS,
00510 // D1SF=SYH04-004-1111,SYSAVS001-0111-5100653-),
00520 // D088-RECFH=U, UPRCL=6144, BLKSIZE=6144)
00530 // *
00540 // * COMPARE & INDEX RESULTS WITHER ROUTINE
00550 //STEP4 EX333 FOR160C1, REASON=256K, PARM=FOR1=NOBURE3E, N0MAP',
00560 // CONT-LKED=BEEN, PARM, LKED=NOI-ST, N0MAP',
00580 //FOR1,SYSDN DD DSN=AA150-MR#01,UNIT=2400-0005,PSR=0100, (PASS),
00590 // V06558R#4288 RD, L1PEU=(5, NL),
00600 // DCB=88C1CF=FBFB08C-880808SSZB=100#00,PRUFNO=2, IEN=3)
00610 // D1SP=(H05, CM1US), SPAC3=(6144, 1500, 50, 3))
00620 // DCB=(RECFH=U, L1RA336=6144, BLKSIZE=6144)
00630 // *
00640 // * COMPARE & INDEX UNFORMATING ROUTINE
00650 //STEP5 EX333 FOR160C1, REASON=256K, PARM=FOR1=NOBURE3E, N0MAP',
00660 // CONT-DKED=BEEN, PARM, LKED=NOI-ST, N0MAP',
00670 //FOR1,SYSDN DD DSN=AA150-MR#01,UNIT=2400-0005,PSR=0100, (PASS),
00680 // D1SP=(H05, CM1US), SPAC3=(6144, 1500, 50, 3))
00690 // DCB=(RECFH=U, L1RA336=6144, BLKSIZE=6144)
00700 // *
00710 // * COMPARE & INDEX UNFORMATING ROUTINE
00720 //STEP5 EX333 FOR160C1, REASON=256K, PARM=FOR1=NOBURE3E, N0MAP',
00730 // CONT-DKED=BEEN, PARM, LKED=NOI-ST, N0MAP',
00740 //FOR1,SYSDN DD DSN=AA150-MR#01,UNIT=2400-0005,PSR=0100, (PASS),
00750 // D1SP=(H05, CM1US), SPAC3=(6144, 1500, 50, 3))
00760 // DCB=(RECFH=U, L1RA336=6144, BLKSIZE=6144)
00770 // *
00780 // * COMPARE & INDEX UNFORMATING ROUTINE
00790 //STEP5 EX333 FOR160C1, REASON=256K, PARM=FOR1=NOBURE3E, N0MAP',
00800 // CONT-DKED=BEEN, PARM, LKED=NOI-ST, N0MAP',
00810 //FOR1,SYSDN DD DSN=AA150-MR#01,UNIT=2400-0005,PSR=0100, (PASS),
00820 // D1SP=(H05, CM1US), SPAC3=(6144, 1500, 50, 3))
00830 // DCB=(RECFH=U, L1RA336=6144, BLKSIZE=6144)
00840 // *
00850 // * COMPARE & INDEX UNFORMATING ROUTINE
00860 //STEP5 EX333 FOR160C1, REASON=256K, PARM=FOR1=NOBURE3E, N0MAP',
00870 // CONT-DKED=BEEN, PARM, LKED=NOI-ST, N0MAP',
00880 //FOR1,SYSDN DD DSN=AA150-MR#01,UNIT=2400-0005,PSR=0100, (PASS),
00890 // D1SP=(H05, CM1US), SPAC3=(6144, 1500, 50, 3))
00900 // DCB=(RECFH=U, L1RA336=6144, BLKSIZE=6144)
00910 // *
00920 // * COMPARE & INDEX UNFORMATING ROUTINE
00930 //STEP5 EX333 FOR160C1, REASON=256K, PARM=FOR1=NOBURE3E, N0MAP',
00940 // CONT-DKED=BEEN, PARM, LKED=NOI-ST, N0MAP',
00950 //FOR1,SYSDN DD DSN=AA150-MR#01,UNIT=2400-0005,PSR=0100, (PASS),
00960 // D1SP=(H05, CM1US), SPAC3=(6144, 1500, 50, 3))
00970 // DCB=(RECFH=U, L1RA336=6144, BLKSIZE=6144)
00980 // *
00990 // * COMPARE & INDEX UNFORMATING ROUTINE
01000 //STEP5 EX333 FOR160C1, REASON=256K, PARM=FOR1=NOBURE3E, N0MAP',
01010 // CONT-DKED=BEEN, PARM, LKED=NOI-ST, N0MAP',
01020 //FOR1,SYSDN DD DSN=AA150-MR#01,UNIT=2400-0005,PSR=0100, (PASS),
01030 // D1SP=(H05, CM1US), SPAC3=(6144, 1500, 50, 3))
01040 // DCB=(RECFH=U, L1RA336=6144, BLKSIZE=6144)
01050 // *
01060 // * COMPARE & INDEX UNFORMATING ROUTINE
01070 //STEP5 EX333 FOR160C1, REASON=256K, PARM=FOR1=NOBURE3E, N0MAP',
01080 // CONT-DKED=BEEN, PARM, LKED=NOI-ST, N0MAP',
01090 //FOR1,SYSDN DD DSN=AA150-MR#01,UNIT=2400-0005,PSR=0100, (PASS),
01100 // D1SP=(H05, CM1US), SPAC3=(6144, 1500, 50, 3))
01110 // DCB=(RECFH=U, L1RA336=6144, BLKSIZE=6144)
01120 // *
01130 // * COMPARE & INDEX UNFORMATING ROUTINE
01140 //STEP5 EX333 FOR160C1, REASON=256K, PARM=FOR1=NOBURE3E, N0MAP',
01150 // CONT-DKED=BEEN, PARM, LKED=NOI-ST, N0MAP',
01160 //FOR1,SYSDN DD DSN=AA150-MR#01,UNIT=2400-0005,PSR=0100, (PASS),
01170 // D1SP=(H05, CM1US), SPAC3=(6144, 1500, 50, 3))
01180 // DCB=(RECFH=U, L1RA336=6144, BLKSIZE=6144)
01190 // *
01200 // * COMPARE & INDEX UNFORMATING ROUTINE
01210 //STEP5 EX333 FOR160C1, REASON=256K, PARM=FOR1=NOBURE3E, N0MAP',
01220 // CONT-DKED=BEEN, PARM, LKED=NOI-ST, N0MAP',
01230 //FOR1,SYSDN DD DSN=AA150-MR#01,UNIT=2400-0005,PSR=0100, (PASS),
01240 // D1SP=(H05, CM1US), SPAC3=(6144, 1500, 50, 3))
01250 // DCB=(RECFH=U, L1RA336=6144, BLKSIZE=6144)
01260 // *
01270 // * COMPARE & INDEX UNFORMATING ROUTINE
01280 //STEP5 EX333 FOR160C1, REASON=256K, PARM=FOR1=NOBURE3E, N0MAP',
01290 // CONT-DKED=BEEN, PARM, LKED=NOI-ST, N0MAP',
01300 //FOR1,SYSDN DD DSN=AA150-MR#01,UNIT=2400-0005,PSR=0100, (PASS),
01310 // D1SP=(H05, CM1US), SPAC3=(6144, 1500, 50, 3))
01320 // DCB=(RECFH=U, L1RA336=6144, BLKSIZE=6144)
01330 // *
01340 // * COMPARE & INDEX UNFORMATING ROUTINE
01350 //STEP5 EX333 FOR160C1, REASON=256K, PARM=FOR1=NOBURE3E, N0MAP',
01360 // CONT-DKED=BEEN, PARM, LKED=NOI-ST, N0MAP',
01370 //FOR1,SYSDN DD DSN=AA150-MR#01,UNIT=2400-0005,PSR=0100, (PASS),
01380 // D1SP=(H05, CM1US), SPAC3=(6144, 1500, 50, 3))
01390 // DCB=(RECFH=U, L1RA336=6144, BLKSIZE=6144)
01400 // *
01410 // * COMPARE & INDEX UNFORMATING ROUTINE
01420 //STEP5 EX333 FOR160C1, REASON=256K, PARM=FOR1=NOBURE3E, N0MAP',
01430 // CONT-DKED=BEEN, PARM, LKED=NOI-ST, N0MAP',
01440 //FOR1,SYSDN DD DSN=AA150-MR#01,UNIT=2400-0005,PSR=0100, (PASS),
01450 // D1SP=(H05, CM1US), SPAC3=(6144, 1500, 50, 3))
01460 // DCB=(RECFH=U, L1RA336=6144, BLKSIZE=6144)
01470 // *
01480 // * COMPARE & INDEX UNFORMATING ROUTINE
01490 //STEP5 EX333 FOR160C1, REASON=256K, PARM=FOR1=NOBURE3E, N0MAP',
01500 // CONT-DKED=BEEN, PARM, LKED=NOI-ST, N0MAP',
01510 //FOR1,SYSDN DD DSN=AA150-MR#01,UNIT=2400-0005,PSR=0100, (PASS),
01520 // D1SP=(H05, CM1US), SPAC3=(6144, 1500, 50, 3))
01530 // DCB=(RECFH=U, L1RA336=6144, BLKSIZE=6144)
01540 // *
01550 // * COMPARE & INDEX UNFORMATING ROUTINE
01560 //STEP5 EX333 FOR160C1, REASON=256K, PARM=FOR1=NOBURE3E, N0MAP',
01570 // CONT-DKED=BEEN, PARM, LKED=NOI-ST, N0MAP',
01580 //FOR1,SYSDN DD DSN=AA150-MR#01,UNIT=2400-0005,PSR=0100, (PASS),
01590 // D1SP=(H05, CM1US), SPAC3=(6144, 1500, 50, 3))
01600 // DCB=(RECFH=U, L1RA336=6144, BLKSIZE=6144)
01610 // *
01620 // * COMPARE & INDEX UNFORMATING ROUTINE
01630 //STEP5 EX333 FOR160C1, REASON=256K, PARM=FOR1=NOBURE3E,
```

Figure 15

IBM JCL CONTAINED ON THE FIRST RECORD OF THE RELEASE TAPE


```

01030 /* SAVE SOURCE CODE FOR NOBEL PROGRAM AND PREPROCESSORS
01040 /** OPTIONAL. TO INVOKE CHANGE CMD TO EVEN IN EACH STEP.
01050 //STEP11 EXEC READ,N=4,NAME='FAA130.INMSC3.FORTZ',V1=250,V2=50,
01060 // COND=(0.LIE)
01070 //SYSIN DD *
01080 GENERATE MAXNAME=1
01090 MEMBER NAME=EXEC
01100 //STEP12 EXEC READ,N=5,NAME='FAA130.INMSC3.FORTZ',V1=250,V2=50,
01110 // COND=(0.LIE)
01120 //SYSIN DD *
01130 GENERATE MAXNAME=1
01140 MEMBER NAME=CENBUS
01150 //STEP13 EXEC READ,N=6,NAME='FAA130.INMSC3.FORTZ',V1=250,V2=50,
01160 // COND=(0.LIE)
01170 //SYSIN DD *
01180 GENERATE MAXNAME=1
01190 MEMBER NAME=OBUMF
01200 /*

```

Figure 15

IBM JCL CONTAINED ON THE FIRST RECORD OF THE RELEASE TAPE

(Part 4 of 4)

inge "INMCIP"
nd in line 180
o reside. Then
vised CDCCEX
outine will not
er, if a study is
airport must be

rate the required
st file to be used.

ser input file just
nd indicates when

reference the appro-

te file in which the

LOC" to the appro-
, not required, delete

the line "00145 GET"
ly the appropriate file
20 "00225 RETURN,

ange "MSGRD" to the
ed. If TAPE22 is not

0 substitute the appro-
st required, delete lines

orrected CDCMEX file.

It CalComp plotter is available, in line 490 change
:CPRHLOAD to the library name for the CalComp plotter
are at your installation.

desirable to have copies of the source code for the Model
m and the preprocessors saved on disk, change the
pn codes in STEP 11, STEP 12 and STEP 13 to EVEN.

4 desirable to get a listing of the source codes, in STEP3,
and STEP5 change "NOSOURCE,NOMAP" to
E,MAP" and "NOLIST,NOMAP" to "LIST,MAP".

/king the above modifications, execute the job named
to process the remainder of the release tape. A general
ram of the loading process resulting from execution of
t shown in Figure 16.

2 JC, in IBMREL has been set up so that each step will
...2 along as all of the preceding steps on which the given
pendent are executed successfully. Therefore, if
es not execute successfully the first time, before
IBMREL again you can delete from IBMREL those
have executed successfully.

CL for executing the Census Filter Routine and the
rm which are contained on files IBMCEX and
pectively. Listings of the JCL files, which are
artitioned data set INMCNT, are shown in Figures
the the usual file name and tape number changes.
IBMCEX change W33040 to the serial number of
e and in IBMEX change W33034 to the serial
plot tape. The Census Tape is supplied with the

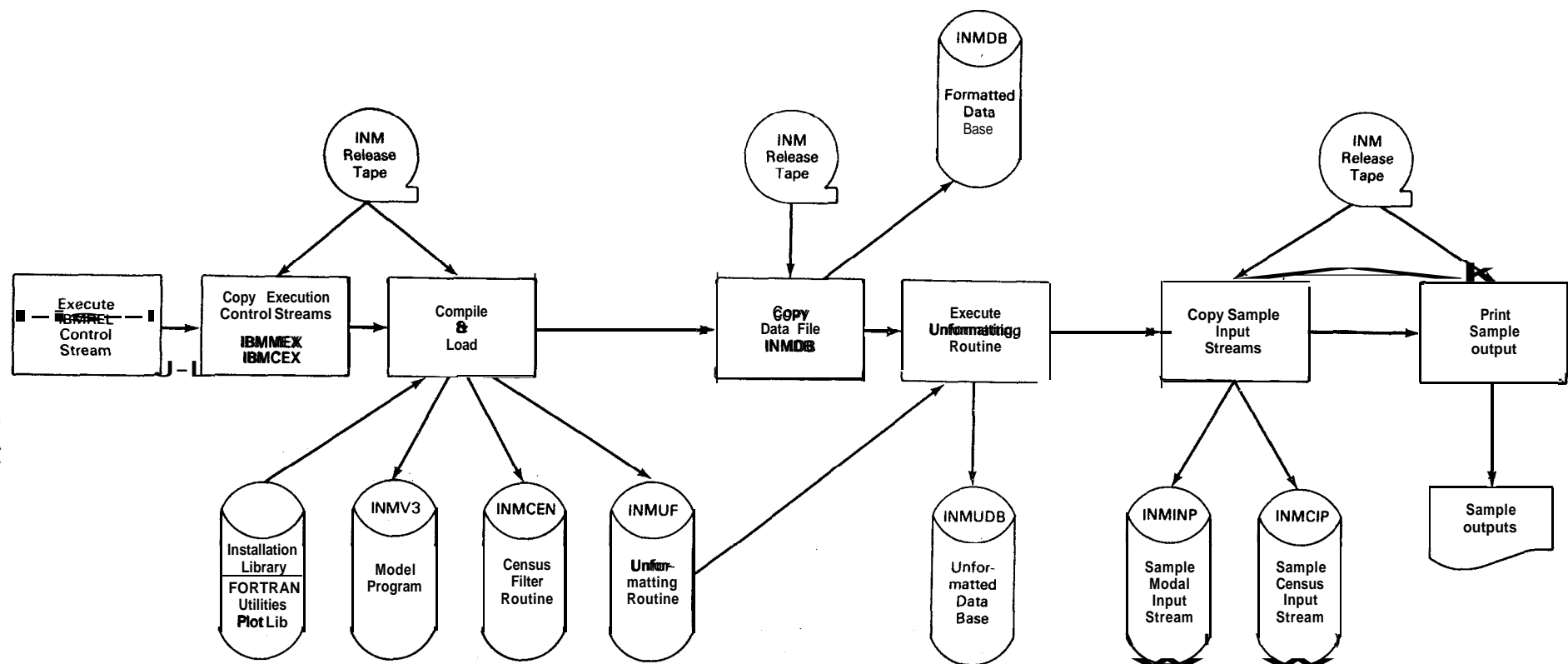


Figure 16
GENERAL FLOW DIAGRAM OF THE
LOADING PROCESS OF FILE IBMREL

"INMCIP"
in line 190
side. Then
d CDCCEX
ine will not
if a study is
ort must be

the required
le to be used.

input file just
indicates when

ence the appro-

ile in which the

C" to the appro-
t required, delete

line "00145 GET,
ne appropriate file
"00225 RETURN,

ge "MSGRD" to the
If TAPE22 is not

ubstitute the appro-
required, delete lines

ected CDCMEX file.

00130 // *
00120 // FT06F001 DD SYSOUT=A
00110 // DCB=(DSORG=PS,RECFM=VBS,LRECL=44,BLKSIZE=6164)
00100 // UNIT=SYSIS,SPACE=(6164,(12,2),RLSE),
// TAPE22,INMLD,DATA,DISP=(NEW,CATLG),

100-7
NMCIP

Figure 17

IBMCEX (CENSUS FILTER EXECUTION)

81 ଅନୁଷ୍ଠାନ

[illegible]

MCIP"
ne 190
. Then
CCCEX
will not
study is
must be
required
, be used.
rt file just
ates when
the appro-
n which the
o the appro-
jured, delete
"00145 GET,
ropriate file
225 RETURN,
VSGRD" to the
TAPE22 is not
tute the appro-
red, delete lines
d CDCMEX file.

88, (.

```

00450 // DCB=(RECFM=UBS,LRECL=172,BLKSIZE=176),SPACE=(176,35000,350),
00460 // RLSE)
00470 //FT31FOO1 DD DSN=8AMFTS,UNIT=SYSST,
00480 // DCB=(RECFM=UBS,LRECL=2004,BLKSIZE=2008,SPACE=(2008,500,50),
00490 // RLSE)
00500 //FT07FOO1 DD DSN=8AMFTS,UNIT=SYSST,
00510 // DCB=(RECFM=UBS,LRECL=132,BLKSIZE=132),SPACE=(132,1000,100),RLSE)
00520 //FT30FOO1 DD DSN=8AMSR3,UNIT=SYSST,
00530 // DCB=(RECFM=UBS,LRECL=1160,BLKSIZE=1164),SPACE=(1164,500,50),
00540 // RLSE)
00550 //FT04FOO1 DD DSN=8AMSR4,UNIT=SYSST,
00560 // DCB=(RECFM=UBS,LRECL=1060,BLKSIZE=1064,SPACE=(1064,500,50),
00570 // RLSE)

```

Figure 18

IBMEX (MODEL PROGRAM EXECUTION)

(Part 2 of 2)

STEP 5.

Execute a sample Census Filter run by executing **IBMCEX** with parameters as included in the JCL stream. This will result in the use of a sample input file called **INMCIP**. The output file (**INMLOC**) created by this run should be used as input to the Model Program. The output expected from this run is as shown below.

THE FOLLOWING STATES ARE INCLUDED IN THE CENSUS WINDOW

NEW YORK

NEW JERSEY

PENNSYLVANIA

DELAWARE

MARYLAND

~~3422043~~ PEOPLE WITHIN THE CENSUS WINDOW

~~1139448~~ RESIDENCES WITHIN THE CENSUS WINDOW

~~1135753~~ RECORDS WERE READ FROM THE CENSUS TAPE

~~3594~~ RECORDS WERE EXTRACTED

A general flow diagram of execution of **IBMCEX** is shown in Figure ~~19~~.

STEP 6.

Execute a sample Model Program run as follows:

- a. If no plotter is available, modify the sample user input file **INMINP** so that it contains no requests for plots within the PROCESS section. In other words, delete the following line:

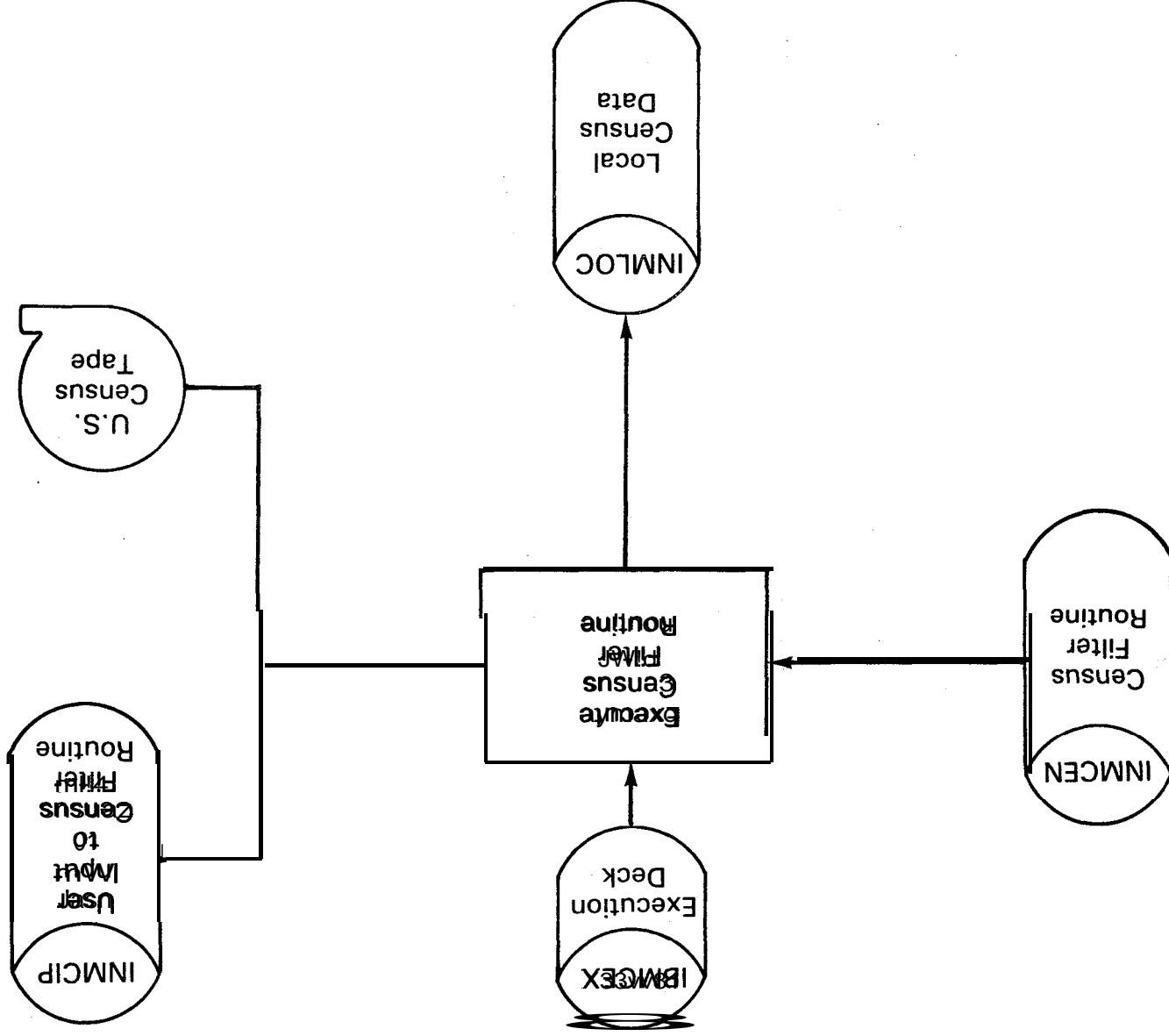
PLOT SIZE I I 8.5 SCALE ~~12000~~

- b. Execute **IBMMEEX** with parameters' as included in the JCL stream. This will result in the use of the sample input file **INMINP** and the filtered census file **INMLOC** which was produced in STEP 5, The output from this run should be identical to the sample output on file ~~#10~~ of the release tape.

A general flow diagram of execution of **IBMMEEX** is shown in Figure 20.

GENERAL FLOW DIAGRAM IBM CENSUS FILTER EXECUTION

Figure 19



6

Figure 20

5.4 EXECUTION PROCEDURES

After the installation process has been completed successfully, the user must accomplish the following steps in order to execute the Integrated Noise Model using other than the sample input data provided on the release tape:

- a. Determine the geographic coordinates of the window to be used to extract data from the Census Tape. The window coordinates are defined below:

window lower left longitude
window lower left latitude
window upper right longitude
window upper right latitude.

Each point must be given in degrees, minutes and seconds, with East longitudes and North latitudes being positive degrees and West longitudes and South latitudes being negative degrees. These values must be placed on the census input file in 4(F5.0, F3.0, F4.1) format. Identify the name of the census input file.

It is suggested that a window covering 15 miles in each direction from the airport center be used to obtain a reasonable area of impact. The value of 15 miles is roughly .25 degrees or 15 minutes of latitude or longitude within the U. S.

- b. In IBMCEX in line 50 change "INMCIP" to the appropriate file name for the census input file and in line 90 change "INMLOC" to the file on which the local Census Data is to reside. Then, execute the Census Filter Routine by submitting the revised IBMCEX file. If an appropriate window has been selected, this routine will not need to be executed again for the given airport. However, if a study is done for another airport, a local census file for that airport must be created.
- c. Using the instructions given in the User's Guide, generate the required input data for the model. Identify the name of the input file to be used.

- d. Determine the input and output files required for the user input file just created. Table 5 describes all of the possible files and indicates when they are required.

- e. Change the JCL file **IBMMEX** to reference the appropriate files.
 - 1 - In line 40 change "**INMINP**" to the appropriate file in which the user input data reside.
 - 2 - If **FT09F00** is required, in line 1 IO change "**INMLOC**" to the appropriate name for the local Census Data. If **FT09F00** is not required, delete line 1 IO.
 - 3 - If **FT21 F00** is required, add after line 1 IO the lines


```
00 111 // FT21 F00 DD DSN=FAA130.MOGRD.DATA,
00 112 // UNIT=SYSSTS, DISP=(NEW, CATALG),
00 113 // DCB=(RECFM=VB, LRECL=84, BLKSIZE=88),
00 114 // SPACE=(88, (7000,700), RLSE))
```
 - 4 - If **FT22F00** is required, in line 380 change "**MSGRD**" to the appropriate file name for the grid file to be saved. If **FT22F00** is not required, delete lines 380 and 390.
 - 5 - If **FT08F00** is required, in line 100 substitute the appropriate reel numbers for **W33034**. If **FT08F00** is not required, delete lines 90 and 100.

- f. Execute the Model Program by submitting the corrected **IBMMEX** file.

5.5 IBM REFERENCE MANUALS

The following United Computing Systems, Inc. (2525 Washington, Kansas City, Missouri 64108) manuals may be useful in installing the model on the CDC computer:

APEX/SL BATCH Reference Manual

Order Number **6S32-879**

APEX/SL FORTRAN Reference Manual

Order Number **6L2- 1078**

TABLE 5

IBM INPUT AND OUTPUT FILES FOR THE' MODEL PROGRAM

<u>FILE</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>COMMENTS</u>
FT02F001 FT02F001	Input	User Input Data	Always required; created by user.
FT03F001 FT03F001	input	Unformatted Data Base	Always required; created during installation.
FT09F001 FT09F001	Input	Local Census Data	Required only if IMPACT Reports are requested; created by executing Census Filter Routine.
FT21F001 FT21F001	Input	Old Grid File	Required only if retrieving contour data from, an old file; created by saving contours during a previous run.
FT22F001 FT22F001	output	Saved Grid File	Required only if saving contours.
FT08F001 FT08F001	output	Plotter Tape for PREVIEW and PLOT	Required only if requesting either PREVIEW or PLOT. The model uses the same tape for both types of plots but the model can be changed by the maintenance programmer to produce separate plotter tapes. Some systems allow FT08F001 to be a disk file rather than a tape.

The following International Business Machines (IBM) Corporation manuals may be useful in installing the **INM** model on the IBM Computer:

OS/VS Message Library: **VS2** System Codes
Order Number **GC38-1008**

OS/VS Message Library: **VS2** System Messages
Order Number **GC38-1002**

OS/VS2 MVS UTILITIES
Order Number **GC26-3902**

OS/VS2 Utilities Messages
Order Number **GC26-3920**

OS/VS Linkage Editor and Loader
Order Number **GC26-3813**

OS/VS Message Library: Linkage Editor and Loader Messages
Order Number **GC38-1007**

IBM System ~~11360~~ **360** Operating System: FORTRAN IV (**G** and **H**) Programmer's Guide
Order Number **GC28-6817**

IBM ~~SYSTEM/360~~ **SYSTEM/360** and ~~System/370~~ **System/370** FORTRAN IV Language
Order Number **GC28-6515**

OS/VS2 MVS JCL
Order Number **GC28-0692.**



U.S. Department
of Transportation
Federal Aviation
Administration

INM

Integrated Noise Model Version 3

Installation Instructions

FAA-EE-81-18

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For the Office of
Environment and Energy

